

**Before the  
Federal Communications Commission  
WASHINGTON, D.C. 20554**

In the Matter of	)	
	)	
Request by Progeny LMS, LLC for Waiver of	)	WT Docket No. 11-49
Certain Multilateration Location and Monitoring	)	
Service Rules	)	

**ORDER**

**Adopted: December 20, 2011****Released: December 20, 2011**

By the Chief, Wireless Telecommunications Bureau, and the Chief, Office of Engineering and Technology:

1. In this Order, we grant the Petition of Progeny LMS, LLC (“Progeny”) for waiver of two rules in the Multilateration Location and Monitoring Service (M-LMS) in the 902-928 MHz band to enable Progeny to utilize a more advanced and efficient multilateration location service than had been contemplated when the rules were established in 1995.<sup>1</sup> Specifically, we waive the prescriptive technical requirements specified as part of the construction requirements set forth in 90.155(e)<sup>2</sup> to allow Progeny to take advantage of technical advances in multilateration technologies over the past fifteen years when it deploys its network. Further, we grant a limited waiver of Section 90.353(g),<sup>3</sup> which provides that multilateration LMS systems’ “primary” operations involve the provision of vehicle location services, to enable Progeny to make its service equally available to other mobile devices so long as Progeny provides its location service to both vehicular and non-vehicular location services. In so doing, we seek to facilitate the deployment of a multilateration service that can provide highly accurate location determinations, including more precise location information that can improve delivery of E 911 emergency services. Finally, in granting waiver of these two rules, we note that the other M-LMS rules and technical requirements remain in place, including the requirement that Progeny demonstrate that its M-LMS system will not cause unacceptable levels of interference to Part 15 devices that operate in the 902-928 MHz band.

**I. BACKGROUND**

2. Progeny, an M-LMS licensee, seeks waiver of two subsections of the Commission’s rules pertaining to M-LMS service. First, Progeny requests that the Commission waive some of the technical specifications set forth in Section 90.155(e) that define what constitutes a “constructed” network for purposes of meeting the Commission’s buildout requirements. In particular, this subsection provides that an M-LMS station will be considered constructed and placed in operation if it is built “in accordance with its authorized parameters and is regularly interacting with one or more other stations to provide location

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<sup>1</sup> See Petition for Waiver of the Rules and Request for Expedited Treatment, Progeny LMS, LLC (filed Mar. 8, 2011) (“Petition”).

<sup>2</sup> 47 C.F.R. § 90.155(e).

<sup>3</sup> *Id.* § 90.353(g).

service, using multilateration technology, to one or more mobile units.”<sup>4</sup> Section 90.155(e) further provides that “LMS multilateration stations will only be considered constructed and placed in operation if they are part of a system that can interrogate a mobile, receive the response at 3 or more sites, compute the location from the time of arrival of the responses and transmit the location either back to the mobile or to a subscriber’s fixed site.”<sup>5</sup> Progeny seeks a waiver of Section 90.155(e) to permit it to operate a multilateration network that, although different from the specific construction requirements set forth in that subsection, would be deemed to satisfy Progeny’s buildout requirements.

3. Second, Progeny requests that the Commission waive Section 90.353(g), which concerns the requirement that the primary operations of multilateration LMS systems involve vehicular location services. The subsection specifically provides that “[m]ultilateration LMS systems whose primary operations involve the provision of vehicle location services, may provide non-vehicular location services.”<sup>6</sup> Progeny seeks a waiver of Section 90.353(g) in order to permit it to make M-LMS services “equally available” to track the location of both vehicular and non-vehicular mobile devices.<sup>7</sup>

4. *Multilateration Location and Monitoring Service.* In 1995, the Commission established M-LMS as a new radio service to be licensed in the 902-928 MHz band.<sup>8</sup> Multilateration systems use spread-spectrum technology to locate vehicles and other moving objects with great accuracy through wide geographic areas.<sup>9</sup> In addition to LMS, this band may be used by a number of other spectrum users. The spectrum is allocated on a primary basis to Federal radiolocation systems and to Industrial, Scientific, and Medical (ISM) equipment.<sup>10</sup> Federal fixed and mobile services are allocated on a secondary basis to Federal radiolocation systems and ISM equipment. LMS licensees are allocated on a secondary basis to Federal users and to ISM devices and may not cause interference to and must tolerate interference from these users and devices.<sup>11</sup> Amateur radio operations are allocated on a secondary basis to LMS.<sup>12</sup> Unlicensed devices also are authorized under Part 15 to use the 902-928 MHz band, although such devices are not afforded interference protection rights and may not cause harmful interference to LMS

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<sup>4</sup> *Id.* § 90.155(e). M-LMS licensees “must construct and place in operation a sufficient number of base stations that utilize multilateration technology.” *Id.* § 90.155(d).

<sup>5</sup> *Id.* § 90.155(e).

<sup>6</sup> *Id.* § 90.353(g).

<sup>7</sup> Petition at 14.

<sup>8</sup> See Amendment of Part 90 of the Commission’s Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, PR Docket No. 93-61, *Report and Order*, 10 FCC Rcd 4695 (1995) (*LMS Report and Order*); Amendment of Part 90 of the Commission’s Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, PR Docket No. 93-61, *Order on Reconsideration*, 11 FCC Rcd 22462 (1996) (*M-LMS Order on Reconsideration*); Amendment of Part 90 of the Commission’s Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, PR Docket No. 93-61, *Memorandum Opinion and Order and Further Notice of Proposed Rulemaking*, 12 FCC Rcd 13942 (1997) (*M-LMS MO&O*). There are two types of LMS systems. M-LMS systems have been envisioned to track and locate objects over a wide geographic area by measuring the difference in time of arrival or phase of signals transmitted from a unit to a number of fixed points, or from a number of fixed points to the unit that is to be located. Non-multilateration LMS systems transmit data to and from objects passing through particular locations, and are licensed site-by-site. 47 C.F.R. § 90.7

<sup>9</sup> *LMS Report and Order*, 10 FCC Rcd at 4697 ¶ 4.

<sup>10</sup> 47 C.F.R. §§ 2.106, 18.301, 18.111(c).

<sup>11</sup> *Id.* § 90.353(a).

<sup>12</sup> *Id.* § 97.301.

licensees, amateur operations, or other licensed systems.<sup>13</sup> In establishing the rules for M-LMS operations, the Commission sought to ensure that the coexistence of the many varied users in the band.<sup>14</sup> The Commission expected that, as M-LMS licensees designed their networks, certain technical refinements might be appropriate in order to ensure that the coexistence of various services in the 902-928 MHz band is as successful as possible, and it conditioned the grant of the each license on the licensee's ability to demonstrate through actual field tests that their systems do not cause unacceptable levels of interference to Part 15 devices.<sup>15</sup>

5. Six entities currently hold 614 M-LMS licenses. Progeny holds 228 licenses, Skybridge Spectrum Foundation (Skybridge) holds 128 licenses and an associated holding company, Telesaurus Holdings GB, LLC (Telesaurus) holds 129 licenses (collectively, 257 Havens licenses), Helen Wong-Armijo holds 84 licenses, PCS Partners, L.P. holds 32 licenses, and FCR, Inc. (FCR) holds 13 licenses. There are three blocks of M-LMS spectrum (Blocks A, B, and C).<sup>16</sup> Progeny holds B and C block licenses in 113 EAs across much of the country.<sup>17</sup> The other licensees mostly hold A block licenses, with the exception of Helen Wong-Armijo whose license holdings include B and C blocks in 24 markets.<sup>18</sup>

6. *2006 Rulemaking.* In 2006, the Commission adopted a Notice of Proposed Rulemaking to reexamine its regulations on the licensing and use of the M-LMS frequencies in the 902-928 MHz band, which are located in the 904-909.75 and 919.75-928 MHz frequencies in the band.<sup>19</sup> The Commission noted that since M-LMS was established there had been "very limited development of M-LMS service under the existing rules" and that the rulemaking was initiated "to determine whether new approaches could produce more efficient and effective use of the 904-909.75 and 919.75-928 MHz spectrum band . . . by M-LMS licensees."<sup>20</sup> The Commission noted that, in reexamining these rules, it also sought to ensure that any changes would continue to protect federal and other licensed users in the

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<sup>13</sup> Under a safe harbor contained in the rules, users of Part 15 devices conforming to specified technical conditions under the safe harbor are insulated from claims in the 902-928 MHz band that such devices cause harmful interference to M-LMS systems. *See* 47 C.F.R. § 90.361.

<sup>14</sup> *LMS Report and Order*, 10 FCC Rcd at 4708 ¶ 23.

<sup>15</sup> *Id.* at 4737 ¶ 82; 47 C.F.R. § 90.353(d).

<sup>16</sup> Block A is 6 megahertz of spectrum, consisting of a 5.75 megahertz block paired with a 0.25 megahertz narrowband channel. Block B 2.25 megahertz of spectrum, consisting of a 2 megahertz block shared with non-M LMS, paired with a 0.25 megahertz narrowband channel. Block C is 5.75 megahertz of spectrum, consisting of a 5.5 megahertz block, paired with a 0.25 megahertz narrowband channel. *See* Location and Monitoring Service Spectrum Auction Scheduled for December 15, 1998, Comment Sought on Reserve Prices or Minimum Opening Bids and Other Auction Procedural Issues, *Public Notice*, DA 98-1616, 13 FCC Rcd 15501 (WTB 1998); 47 C.F.R. § 90.357(a).

<sup>17</sup> Progeny also holds two A block licenses in markets other than those in which its B and C block licenses are located. *See* Petition at 4.

<sup>18</sup> Helen Wong-Armijo holds 24 B block licenses and 60 C block licenses. PCS Partners and Telesaurus each hold one Block C license.

<sup>19</sup> Amendment of the Commission's Part 90 Rules in the 904-909.75 and 919.75-928 MHz Bands, WT Docket No. 06-49, *Notice of Proposed Rulemaking*, 21 FCC Rcd 2809 (2006) (*M-LMS NPRM*).

<sup>20</sup> *Id.* at 2810 ¶ 1. The rulemaking was partly in response to a Petition for Rulemaking filed in 2002 by Progeny, but also was initiated to address "the ability of our Part 90 M-LMS rules to afford licensed service providers greater flexibility to respond to changing market conditions" and to consider rule changes that could facilitate higher-valued licensed use of the spectrum in the M-LMS bands. *Id.* at 2810 ¶¶ 2-3.

band and avoid any significant increase in interference to unlicensed users in the band.<sup>21</sup> This rulemaking proceeding is pending.

7. *Progeny's Waiver Petition.* On March 8, 2011, Progeny filed its petition for waiver of Sections 90.155(e) and 90.353(g) of the Commission's rules.<sup>22</sup> Progeny states that "M-LMS development has been stalled"<sup>23</sup> and that it and its partners have developed a "multilateration technology that can provide highly accurate position location information using relatively simple and inexpensive terrestrial network architecture."<sup>24</sup> Progeny states that its technical approach "can provide highly accurate and reliable position location information particularly in challenging environments such as indoors and in urban centers,"<sup>25</sup> and that it also could be used in emergency situations.<sup>26</sup> Progeny's proposal involves using one transmission path instead of multiple transmission paths back and forth between base stations and vehicles.<sup>27</sup> Progeny claims that a waiver of Section 90.155(e) would serve the public interest by allowing the provision of position location services that are "more accurate, more reliable, more spectrally efficient and far less potentially interfering than the M-LMS network architecture" contemplated under the existing rule.<sup>28</sup> With respect to Section 90.353(g), Progeny claims that a waiver of this rule would serve the public interest because GPS is less accurate indoors and around tall buildings than for outdoor or rural use.<sup>29</sup> Progeny also states that a "broadcast-only M-LMS network configuration would substantially reduce M-LMS transmissions in the 902-928 MHz band" and that "the risk of harmful interference to other users of the band would in no way be affected by the number of, or types of, mobile devices utilizing a broadcast-only M-LMS network."<sup>30</sup>

8. On March 10, 2011, the Wireless Telecommunications Bureau sought comment on Progeny's Petition.<sup>31</sup> On March 25, 2011, Skybridge Spectrum Foundation, Telesaurus Holdings GB LLC, Environmental LLC (formerly known as AMTS Consortium LLC), Verde Systems LLC (formerly known as Telesaurus VPC LLC), Intelligent Transportation & Monitoring Wireless LLC, V2G LLC, and Warren Havens (collectively "Havens") filed a "Request to Reissue Public Notice and Place in Existing Relevant Docket and Request to Extend Deadlines for Comments and Reply Comments."<sup>32</sup> Also on March 25, 2011, Progeny filed an Opposition to Havens' request to issue a new public notice and restart

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<sup>21</sup> *Id.* at 2810 ¶ 1.

<sup>22</sup> *See* Petition; 47 C.F.R. §§ 90.155(e), 90.353(g). Progeny also requested expedited treatment of the Petition.

<sup>23</sup> Petition at 5.

<sup>24</sup> *Id.* at 3.

<sup>25</sup> *Id.* at 4.

<sup>26</sup> *See id.* at 3.

<sup>27</sup> *Id.* at 4.

<sup>28</sup> *Id.* at 12.

<sup>29</sup> *Id.* at 14.

<sup>30</sup> *Id.* at 13.

<sup>31</sup> Wireless Telecommunications Bureau Seeks Comment on Request by Progeny LMS, LLC For Waiver of Certain Multilateration Location and Monitoring Service Rules, WT Docket No. 11-49, *Public Notice*, DA 11-446, 26 FCC Rcd 3495 (WTB 2011). The notice set March 25, 2011 as the comment date on Progeny's Petition, and April 4, 2011 as the reply comment date.

<sup>32</sup> Request to Reissue Public Notice and Place in Existing Relevant Docket and Request to Extend Deadlines for Comments and Reply Comments, WT Docket No. 11-49 (March 25, 2011).

the comment cycle for Progeny's Petition.<sup>33</sup> On March 25, 2011, the Wireless Telecommunications Bureau released a Public Notice extending the time to file reply comments on the Petition to April 11, 2011.<sup>34</sup>

9. *Comments on Progeny's Waiver Petition.* Three parties commented on the Petition. Two of these parties, Itron, Inc. ("Itron") and Cellnet Technology, Inc., a Landis+Gyr company ("L+G"), operate Part 15 devices in the 902-928 MHz band.<sup>35</sup> Itron supplies Automatic Meter Reading ("AMR") technologies that use unlicensed Part 15 devices to electric, gas, and water utility companies nationwide, enabling smart grid operations by allowing utilities to monitor business and residential meters from remote locations.<sup>36</sup> L+G provides integrated energy management solutions tailored to energy company needs and has deployed a "low-cost, private internal telemetry services network" that allows it to transmit and receive data for remote monitoring and control devices, primarily utility meters.<sup>37</sup> The third commenter, Warren Havens, is another M-LMS licensee (see above).

10. Itron and L+G urge the Commission to "proceed cautiously in considering this or any future requests for waiver by M-LMS licensees."<sup>38</sup> Itron notes that the M-LMS rules were crafted to allow for the coexistence of M-LMS systems with Part 15 devices (as well as other users), and is concerned with the potential for interference from expanded use of M-LMS spectrum, including the use of additional transmitters to provide indoor service.<sup>39</sup> It also expresses concern about the "interplay" between the Petition and the 2006 M-LMS rulemaking in WT Docket No. 06-49.<sup>40</sup> In particular, Itron notes that the Notice of Proposed Rulemaking sought comment on lowering the maximum M-LMS power limits yet Progeny's waiver request does not address "the possibility of modifying the M-LMS power limits to compensate for the impact of its proposal."<sup>41</sup> It also states that the waiver request does not discuss "the impact of any future rule changes on Progeny operations under the proposed waiver."<sup>42</sup> L+G also comments that the M-LMS rules are designed to foster the coexistence of M-LMS systems with Part 15 devices and states that Progeny has not provided sufficient data, including detail as to the "effective occupancy of the band by M-LMS licensees," to support its requested waivers.<sup>43</sup> L+G further comments

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<sup>33</sup> Opposition of Progeny LMS, LLC, WT Docket No. 11-49 (March 25, 2011).

<sup>34</sup> Wireless Telecommunications Bureau Extends Period to File Reply Comments on Progeny LMS LLC Petition for Waiver of Certain Multilateration Location and Monitoring Service Rules, WT Docket No. 11-49, *Public Notice*, DA 11-559, 26 FCC Rcd 4112 (WTB 2011).

<sup>35</sup> Comments of Itron, Inc., WT Docket No. 11-49 (Mar. 25, 2011) ("Itron Comments"); Reply Comments of Cellnet Technology, Inc., a Landis+Gyr company, WT Docket No. 11-49 (Apr. 11, 2011) ("L+G Reply Comments").

<sup>36</sup> Itron Comments at 2.

<sup>37</sup> L+G Reply Comments at 1 n.1.

<sup>38</sup> Itron Comments at 1; L+G Reply Comments at 1-2.

<sup>39</sup> Itron Comments at 3-5.

<sup>40</sup> *Id.* at 5-6.

<sup>41</sup> *Id.* at 6.

<sup>42</sup> *Id.*

<sup>43</sup> L+G Reply Comments at 2-4.



that the Commission should “reaffirm” that Progeny must comply with the system field test requirements in the rules.<sup>44</sup>

11. Havens comments that Progeny’s “current and further requests should be summarily rejected” unless Progeny “lays out a clear plan, technology, system design testing plan regarding Part 15 and federal device systems, need showing as to how rule waivers or changes are more in public interest than no changes, etc.”<sup>45</sup> Havens argues that the Petition should not be granted while the rulemaking proceeding is pending.<sup>46</sup> In addition, Havens states that “Progeny’s proposal clearly is to remove its M-LMS spectrum from ITS applications of any significance and viability.”<sup>47</sup> Havens also argues that Progeny’s proposal presents concerns over interference, and that more data is required to assess the Petition’s impact.<sup>48</sup> Havens also presents certain arguments concerning procedural matters and the adequacy of notice.<sup>49</sup>

12. In its reply comments, Progeny asserts that its proposed broadcast-only network configuration and low bit rate, higher processing gain signal would reduce the number of necessary base station transmitters and overall transmissions, thereby reducing the potential for interference with Part 15 devices.<sup>50</sup> In further comments, Progeny claims that its proposal would result in reduced effective occupancy, more regulatory certainty, and no impact on the pending rulemaking.<sup>51</sup> Progeny also states that it is fully aware of its obligation to demonstrate through field tests that its system does not cause unacceptable interference to Part 15 devices operating in the band.<sup>52</sup>

## II. DISCUSSION

13. We grant Progeny’s request for waiver of Sections 90.155(e) and 90.353(g) of the Commission’s rules to the extent discussed herein. To obtain a waiver of the Commission’s rules, pursuant to Section 1.925(b)(3),<sup>53</sup> a petitioner must demonstrate that particular facts make strict compliance with a rule inconsistent with the public interest and the requested relief would not undermine

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<sup>44</sup> *Id.* at 3-4 (citing section 90.353(d) of the rules, which requires M-LMS licensees to demonstrate through actual field tests that their systems do not cause unacceptable levels of interference to part 15 devices).

<sup>45</sup> Havens Comments at 7-8. On March 25, 2011, Havens submitted comments in opposition to the Petition. Comments in Opposition, WT Docket No. 11-49 (March 25, 2011). Havens submitted an “errata” version of its comments on March 28, 2011. Comments in Opposition Errata Copy, WT Docket No. 11-49 (March 28, 2011) (“Havens Comments”). On April 11, 2011, Havens submitted an additional pleading opposing Progeny’s Petition. Further Comments in Opposition, WT Docket No. 11-49 (April 11, 2011) (“Havens Further Comments”), together with certain documentation, and also filed more documentation on April 15, 2011.

<sup>46</sup> *See* Havens Comments at 9.

<sup>47</sup> Havens Further Comments at 2. Havens further states that “[o]ne-way service will not be ITS wireless, regardless of whether multilateration is performed on the down- or up- link or both.” *Id.* at 3-4.

<sup>48</sup> *See* Havens Further Comments, Exhibit 1.

<sup>49</sup> *See* Havens Comments at 3-5.

<sup>50</sup> Reply Comments of Progeny LMS, LLC (April 11, 2011) at 1, 5-8 (“Progeny Reply Comments”).

<sup>51</sup> *See* Further Reply Comments of Progeny LMS, LLC (April 14, 2011) at 3-5, 9-10 (“Progeny Further Reply Comments”).

<sup>52</sup> Progeny Further Reply Comments at 4-5.

<sup>53</sup> 47 C.F.R. § 1.925(b)(3).

the policy objectives of the rule.<sup>54</sup> Based on the record, we conclude that grant of the requested waivers is warranted.<sup>55</sup> Below, we first discuss waiver of Sections 90.155(e) and 90.353(g) and then the interference concerns associated with Progeny's proposed system.

14. *Waiver of Section 90.155(e).* As discussed below, we grant Progeny a waiver of Section 90.155(e) of the Commission's rules. Section 90.155(e) provides that an M-LMS station will be considered constructed and placed in operation if it is built "in accordance with its authorized parameters and is regularly interacting with one or more other stations to provide location service, using multilateration technology, to one or more mobile units."<sup>56</sup> Section 90.155(e) further provides that "LMS multilateration stations will only be considered constructed and placed in operation if they are part of a system that can interrogate a mobile, receive the response at 3 or more sites, compute the location from the time of arrival of the responses and transmit the location either back to the mobile or to a subscriber's fixed site."<sup>57</sup>

15. We find that the particular facts presented in the record with respect to Progeny's proposed operations make the strict application of Section 90.155(e) to Progeny's proposed operations inconsistent with the public interest. Position location technology has evolved significantly since the M-LMS rules were adopted in 1995 and now includes handset-based and hybrid location technologies,<sup>58</sup> as well as the network-based technology that is the basis of the requirements in Section 90.155(e). Notwithstanding the specific requirements of Section 90.155(e), the order adopting this rule and the orders addressing petitions for reconsideration of the 1995 rules indicate that the Commission generally intended to afford M-LMS licensees flexibility so that they could develop a variety of technology options in providing multilateration service.<sup>59</sup> In addition, the definition of M-LMS in Section 90.7 of the Commission's rules provides a flexible framework to facilitate the implementation of M-LMS. This rule broadly defines M-LMS as "[a] system that is designed to locate vehicles or other objects by measuring

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<sup>54</sup> See, e.g., *WAIT Radio v. FCC*, 413 F.2d 1153, 1157 (D.C. Cir. 1969) (*WAIT Radio*) (holding that the FCC may exercise its discretion to waive a rule where particular facts would make strict compliance inconsistent with the public interest), *aff'd*, 459 F.2d 1203 (1973), *cert. denied*, 409 U.S. 1027 (1972); *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990) (holding that waiver of the Commission's rules may be granted in instances where the particular facts make strict compliance inconsistent with the public interest if applied to the petitioner and when the relief requested would not undermine the policy objective of the rule in question).

<sup>55</sup> We reject Havens' argument that "guidance to prospective waiver applicants" offered by the Commission respecting a different service would provide "a useful measure with regard to M-LMS." Havens Comments at 8. Unlike the AMTS service considered by Havens in its comments, the Commission provided no specific guidance in the orders for M-LMS as to future waivers of the M-LMS rules. As we have stated, we are considering Progeny's Petition under the Commission's rules and relevant legal precedent.

<sup>56</sup> 47 C.F.R. § 90.155(e). M-LMS licensees "must construct and place in operation a sufficient number of base stations that utilize multilateration technology." *Id.* § 90.155(d).

<sup>57</sup> 47 C.F.R. § 90.155(e).

<sup>58</sup> See Petition at 5 (discussing that "a lot has happened" in position location technology since the M-LMS rules were adopted, and that GPS has become widely available).

<sup>59</sup> See, e.g., *LMS MO&O*, 12 FCC Rcd at 13965 ¶ 61 (declining to prohibit wideband forward links because to do so would "preclude certain LMS technology options from being developed"). See also *LMS Report and Order*, 10 FCC Rcd at 4740 ¶ 89 ("Allowing any types of emissions will enable any type of location or monitoring technology or ancillary service to develop without restrictions.").

the difference of time of arrival, or difference in phase, of signals transmitted from a unit to a number of fixed points or from a number of fixed points to the unit to be located.”<sup>60</sup>

16. The specific construction requirements set forth in Section 90.155(e) assume a technology in which there would be multiple transmission paths, with location determined at network level and reported back to user.<sup>61</sup> Progeny’s proposed M-LMS system, however, would employ a single transmission path for a broadcast signal from base stations to the mobile devices.<sup>62</sup> Absent a waiver of Section 90.155(e), Progeny would have to deploy a specific network-based system contemplated in 1995 that would use multiple transmission paths between base stations and user terminals.<sup>63</sup> The system also would have to determine the position of each mobile with at least three M-LMS transmit base stations, rather than combining M-LMS base stations with GPS or other position location technologies.<sup>64</sup> As discussed below, we are not persuaded that Progeny’s proposed technology has greater potential to increase interference to other users compared to the specific system technology currently set out in the construction requirement rule. Further, we find that without a waiver, application of Section 90.155(e) would impede Progeny’s ability to offer an innovative service that promotes the public interest and is competitive with other position location technologies.<sup>65</sup>

17. As discussed above, the Commission intended to provide M-LMS licensees with some flexibility in developing multilateration technologies to provide M-LMS.<sup>66</sup> Notably, the Commission’s intent to provide flexibility to facilitate to implement M-LMS is reflected in the definition for M-LMS in the rules,<sup>67</sup> and Progeny states that its proposed system would allow for the use of the spectrum for location services, including for emergency location services that would serve the public interest.

18. We are not persuaded by Havens’ assertion that Progeny’s proposal “for a one-way broadcast technology for M-LMS would limit the benefit of the M-LMS band for ITS networks.”<sup>68</sup> Progeny’s proposal offers the potential for the use of the spectrum in a way that would serve the public interest. In particular, Progeny’s technology offers the potential for significantly improved location based services that provide for vehicle location services as well as other mobile units, particularly for use in challenging locations such as urban canyons or inside buildings. It also offers the opportunity for enhanced position location for emergency 911 services.

19. In light of record and the substantial public interest benefits of Progeny’s proposed system, we find that strict application of Section 90.155(e) to Progeny would be inconsistent with the public interest, and this limited relief would not undermine the policy objective of Section 90.155(e).

20. *Waiver of Section 90.353(g).* Section 90.353(g) provides that “[m]ultilateration LMS systems whose primary operations involve the provision of vehicle location services, may provide non-

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<sup>60</sup> 47 C.F.R. § 90.7.

<sup>61</sup> See 47 C.F.R. § 90.155(e).

<sup>62</sup> Petition at 11.

<sup>63</sup> *Id.* at 6, 11.

<sup>64</sup> *Id.*

<sup>65</sup> *Id.* at 10.

<sup>66</sup> See, e.g., *LMS MO&O*, 12 FCC Rcd at 13965 ¶ 61; *LMS Report and Order*, 10 FCC Rcd at 4740 ¶ 89.

<sup>67</sup> 47 C.F.R. § 90.7.

<sup>68</sup> Havens Further Comments, Exhibit 1 at 3.



vehicular location services.”<sup>69</sup> Progeny indicates that the proposed system will meet the definition of M-LMS but seeks a waiver of Section 90.353(g) in order to permit it to make M-LMS services equally available to track the location of vehicular and non-vehicular devices.<sup>70</sup> Progeny states that its proposed approach “can provide highly accurate and reliable position location information particularly in challenging environments such as indoors and in urban centers,”<sup>71</sup> and that its proposal has been developed “[i]n response to these growing concerns,” including the ability of emergency service providers to receive precise location information when emergency calls are made from mobile devices, such as E911 emergency calls from indoor locations.<sup>72</sup> The public interest benefits from improved position location service in areas where GPS is limited, such as in urban canyons and indoors, are substantial.<sup>73</sup>

21. A strict application of Section 90.353(g) would result in Progeny being required to offer its service primarily to vehicles, thereby reducing the usefulness of its proposed location-based service as a means for locating non-vehicular mobile devices in GPS-challenged environments, such as indoors and urban areas.<sup>74</sup> We grant a limited waiver of this rule that allows Progeny to deploy its proposed system so long as Progeny provides a service that tracks both the locations of vehicles and other mobile non-vehicular devices.

22. We find that granting this limited waiver would serve the public interest and would not undermine the policy objective of Section 90.353(g) that M-LMS be used to provide vehicular location services. Progeny’s operations under its proposed multilateral system will continue to involve the provision of vehicle location services as well as non-vehicular location services.<sup>75</sup> Progeny states that a waiver of Section 90.353(g) would permit it to make M-LMS services “equally available” to track the location of both vehicular and non-vehicular mobile devices.<sup>76</sup> The grant of this limited waiver is consistent with the Commission’s observation in the *LMS Report and Order* that its requirement that M-LMS operations provide non-vehicular services “recognizes the general capability of multilateration systems to cover a wide area and perform location determinations for any type of object within that area.”<sup>77</sup> This waiver is also consistent with the Commission’s decision to “decline to adopt a specific cap on non-vehicular location services” in order “[t]o afford multilateration LMS operators maximum flexibility in designing their systems.”<sup>78</sup>

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<sup>69</sup> 47 C.F.R. § 90.353(g).

<sup>70</sup> See Petition at 2.

<sup>71</sup> *Id.* at 4.

<sup>72</sup> *Id.* at 3.

<sup>73</sup> *Id.* at 5 (“The public need for more accurate and reliable position location services is substantial. Progeny believes . . . it has developed a solution.”).

<sup>74</sup> *Id.* at 14 (“GPS provides far less accurate position location information when used indoors and in tall buildings – locations most used by handheld wireless devices”).

<sup>75</sup> 47 C.F.R. § 90.353(g); see also *M-LMS Report and Order*, 10 FCC Rcd at 4708 ¶ 24.

<sup>76</sup> Petition at 14.

<sup>77</sup> *LMS Report and Order*, 10 FCC Rcd at 4708 ¶ 24.

<sup>78</sup> *LMS MO&O*, 12 FCC Rcd at 13966-67 ¶ 64.

23. This limited waiver also will not undermine the Commission's policy objective of maintaining the coexistence of other users in the band.<sup>79</sup> As discussed below, this order does not waive any of the MLMS interference rules the Commission adopted in 1995 and 1996.

24. *Interference issues.* As discussed above, commenters have expressed concerns about the potential impact of Progeny's proposed operations on other operations in the band, including Part 15 devices. Although commenters express concern that the implementation of Progeny's proposal could increase the number of transmitters, we note that the Commission's rules for M-LMS do not limit the number of sites or the level of geographic area coverage for an M-LMS licensee.<sup>80</sup> Thus, an operator may build as many sites as are necessary to provide service, including service for both vehicular and non-vehicular purposes.<sup>81</sup> We also reject Havens' claims regarding the potential for increased interference with other users in the event that Progeny elects to place its antennas at higher heights as not relevant, because the Commission's rules do not provide antenna height restrictions for M-LMS operations.

25. In granting these waivers, we are not revising other interference-related requirements applicable to M-LMS operations.<sup>82</sup> It is well established that Part 15 devices are not entitled to protection from interference.<sup>83</sup> In this band, however, the Commission adopted specific interference rules designed to maintain coexistence of many varied users in the band, including Part 15 users.<sup>84</sup> This order does not waive any of those rules. Included in these rules is the obligation, set forth in Section 90.353(d), that Progeny demonstrate through actual field tests that its M-LMS system will not cause unacceptable levels of interference to Part 15 devices.<sup>85</sup> As the Commission noted, the purpose of the testing condition "is to insure that multilateration LMS licensees, when designing and constructing their systems, take into consideration a goal of minimizing interference to existing deployments or systems of Part 15 devices in their area, and to verify through cooperative testing that this goal has been served."<sup>86</sup>

26. We also note that Progeny's proposal takes the goal of minimizing interference to other users into account. In its Petition, it states that grant of the waiver would in fact enhance its ability to comply with other M-LMS rules, including the requirement that it demonstrate that its system does not cause unacceptable levels of interference to Part 15 devices.<sup>87</sup> Progeny asserts that its proposal will result in fewer M-LMS base stations and transmissions which reduce the potential for interference to Part 15 devices.<sup>88</sup> According to Progeny, its broadcast-only network configuration will have fewer transmissions

<sup>79</sup> See *LMS Report and Order*, 10 FCC Rcd at 4708 ¶ 23; *LMS MO&O*, 12 FCC Rcd at 13945 ¶ 5.

<sup>80</sup> See 47 C.F.R. § 90.155(d).

<sup>81</sup> *Id.*

<sup>82</sup> Because this Order does not revisit the interference-related requirements that apply to M-LMS operations within the 902-928 MHz band, which were designed to enable co-existence of different services in the band and prevent unacceptable levels of interference to Part 15 users, we conclude that the potential benefits associated with granting these waivers, which allow Progeny to proceed with plans to deploy a more advanced and efficient multilateration location and monitoring service to the public, do not impose additional costs and thus outweigh the potential costs associated with interference.

<sup>83</sup> See *LMS MO&O*, 12 FCC Rcd at 13968 ¶ 69.

<sup>84</sup> *LMS Report and Order*, 10 FCC Rcd at 4708 ¶ 23.

<sup>85</sup> 47 C.F.R. § 90.353(d).

<sup>86</sup> *LMS MO&O*, 12 FCC Rcd at 13968 ¶ 69.

<sup>87</sup> Petition at 7.

<sup>88</sup> See Progeny Reply Comments at 1, 4.

because it does not require return links or frequency re-use.<sup>89</sup> Progeny also states that this configuration will provide location services to a greater number of mobile devices without increasing the number of forward link transmissions.<sup>90</sup> Progeny further notes that the higher processing gain of its low bit rate transmissions will allow its signals to penetrate indoors without the need for additional transmitters.<sup>91</sup> According to Progeny, its “broadcast-only network configuration will allow it to provide position location service over a specific geographic area with a minimal number of base station transmitters – significantly fewer than would be necessary for a traditional M-LMS systems. Therefore, the reduced transmissions will result in reduced potential for interference to Part 15 operations.”<sup>92</sup> Progeny’s statements demonstrate that it intends to design its system so as to maintain the coexistence of the many varied users in the band. Pointing to the Commission’s recognition that M-LMS licensees have flexibility to facilitate band sharing and minimize interference to Part 15 operations by employing various technical refinements, Progeny states that, in designing its M-LMS system, it is exploring some combination of power control, pulse duration, and/or duty cycle limits in order to minimize the impact of its system on other operations.<sup>93</sup> Further, Progeny expressly acknowledges its obligations with respect to field testing, and states that it intends to employ a variety of spectrum sharing techniques to meet those obligations.<sup>94</sup> As discussed above, the testing requirement will require Progeny to take the goal of minimizing interference to existing users, including Part 15 users, into consideration and to verify through cooperative testing that this goal is being served.

27. L+G argues that Progeny has not provided “sufficient detail as to the effective occupancy of the band by M-LMS licensees over any particular period of time.”<sup>95</sup> We note that the current rules do not provide for restrictions on transmission pulse duration or duty cycle. When the Commission crafted its rules for M-LMS, it approved the use of forward links in the LMS wideband sub-bands, and declined to permit higher power in these forward links, stating that “although a duty cycle limitation could be applied to each individual [wideband] forward link transmitter, considered collectively, there would almost always be at least one transmitter transmitting in an area at any given time.”<sup>96</sup> For these reasons, we do not agree with L+G that further detail is needed to address “the effective occupancy of the band by M-LMS licensees over any period of time,” or that the waiver would be inconsistent with the rules since there would be “virtually no ‘quiet time.’”<sup>97</sup> We also reject Havens’ argument that Progeny’s proposal would increase licensed “spectrum use in space and time” with unlicensed use, “as compared to vehicle ITS services under the current rules.”<sup>98</sup> As stated above, the rules do not impose a duty cycle or place limits on transmission pulse duration.

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<sup>89</sup> *Id.* at 5-6.

<sup>90</sup> *Id.* at 6-7.

<sup>91</sup> *Id.* at 7-8.

<sup>92</sup> *Id.* at 8.

<sup>93</sup> Progeny Further Reply Comments at 4 (citing *LMS Report and Order*, 10 FCC Rcd at 4737 ¶ 82).

<sup>94</sup> *Id.* at 4-5.

<sup>95</sup> L+G Reply Comments at 3.

<sup>96</sup> See *LMS MO&O*, 12 FCC Rcd at 13996 ¶ 61.

<sup>97</sup> See L+G Reply Comments at 3.

<sup>98</sup> See Havens Further Comments, Exhibit 1 at 4.

28. We also reject the arguments that Progeny should be required at this time to provide more data in order to assess the possible interference effects of its network.<sup>99</sup> Progeny's filings in this docket provide adequate support for the waiver of the two particular rules that it requests in the Petition. Further, the M-LMS rules contain other technical restrictions that protect against the potential for harmful interference, including maximum power limits and the field testing requirement, and this waiver order does not affect application of any of these rules.

29. The field testing requirement set forth in Section 90.353(d) requires that Progeny demonstrate through actual field tests that its M-LMS system will not cause unacceptable levels of interference to Part 15 devices in the 902-928 MHz band. As the Commission has explained, Part 15 devices are used for a variety of important public, private, and consumer applications.<sup>100</sup> These include "smart grid" applications (such as those discussed above), including remote meter reading and utility load management, as well as cordless telephones and wireless local area networks.<sup>101</sup> As an additional condition of this order, we require Progeny, once it has completed design of its M-LMS system but prior to commencing commercial operations, to file a report in this proceeding that provides details on the M-LMS system design (e.g., proposed transmit bandwidth, power levels and power controls, duty cycle, sharing techniques, etc.), describes the process by which it carried out the field testing, including the particular types of Part 15 devices tested, and demonstrates that its M-LMS system will not cause unacceptable levels of interference to Part 15 devices that operate in the 902-928 MHz band. We will place this report on public notice for comment. If no significant interference issues are raised, we will promptly notify Progeny that it may commence commercial operations. If, however, significant interference concerns are raised, we will determine what additional steps may be appropriate. Finally, we reserve the right to require Progeny to take any necessary remedial action, including turning off its service, if we find that its network operations are causing unacceptable levels of interference to Part 15 users in the 902-928 MHz band.

30. *Other issues.* We also reject the other arguments by Havens, including that Progeny's Petition should not be granted because there may be some other technologies under consideration or available, or because there may be other uses for the spectrum.<sup>102</sup> These are not reasons to deny the Petition, especially given the speculative nature of these arguments, arguments that are not relevant to the waiver, the Commission's intent discussed above that the M-LMS rules provide a flexible framework to implement operations, and our finding that granting the waiver will serve the public interest. In addition, we reject Havens' argument that M-LMS "was allocated for ITS, which is a PMRS safety-oriented service that must be primarily open and at no cost."<sup>103</sup> There is no requirement in the Commission's rules for M-LMS to be primarily "safety-oriented" or offered at no cost.

31. We also reject arguments concerning our consideration of Progeny's Petition in light of the pending rulemaking proceeding in WT Docket No. 06-49.<sup>104</sup> As we discuss above, we find that

<sup>99</sup> See Havens Comments at 9-10; Havens Further Comments, Exhibit 1 at 2-4; Itron Comments at 1; L+G Reply Comments at 3. We note that the relief granted Progeny in this order is without prejudice to Havens' allegations concerning Progeny's status as an M-LMS licensee. See Requests of Progeny LMS, LLC and PCS Partners, L.P. for Waiver of Multilateration Location and Monitoring Service Construction Rules, *Order*, 23 FCC Rcd 17250, 17259 ¶ 28 (WTB 2008).

<sup>100</sup> See, e.g., *M-LMS NPRM*, 21 FCC Rcd at 2810 ¶ 3, 2811-12 ¶ 5.

<sup>101</sup> *Id.*

<sup>102</sup> See, e.g., Havens Comments at 4-7; Havens Further Comments at 2-3, 4 & Exhibits 1, 2, 5.

<sup>103</sup> See Havens Comments at 7.

<sup>104</sup> See Itron Comments at 5-6; L+G Comments at 3; Havens at 9.

waiver of the two rules is in the public interest in this limited case, and there is no rule preventing us from considering a limited waiver request based on the current rules while the rulemaking proceeding is pending. A rulemaking proceeding involves consideration of certain policy changes and rules of general applicability. In contrast, a waiver is granted if the Commission finds that particular facts make strict compliance with a rule inconsistent with the public interest and the requested relief would not undermine the policy objectives of the rule. In this waiver, the issues are limited, involving a particular provider and application of the current rules to particular circumstances. In granting the waiver we are responding to a specific proposal to operate a location service using a new system that will enhance location services in areas where it has been difficult to provide such services, particularly indoors and in urban centers, and which also may be available as a complement to emergency E911 services.

32. Finally, we reject Havens' allegation that there was not sufficient time to comment on the Petition.<sup>105</sup> We find that the time provided in the Public Notice was sufficient, and the time for submitting reply comments was extended from the original deadline for reply comments in response to Havens' own request for added time to file comments and reply comments.

### III. CONCLUSION

33. Based on the record and all of the circumstances presented in this matter, including the public interest benefits that will be served, we find that granting the waivers to the extent discussed herein serves the public interest. We conclude that Progeny's waiver request satisfies the waiver criteria to warrant waiver of Sections 90.155(e) and 90.355(g).

### IV. ORDERING CLAUSES

34. Accordingly, IT IS ORDERED that, pursuant to Sections 2 and 4(i) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 152, 154(i), and Sections 0.131, 0.331, and 1.925 of the Commission's rules, 47 C.F.R. §§ 0.131, 0.331, 1.925, the petition for waiver filed by Progeny LMS, LLC dated March 8, 2011 IS GRANTED to the extent discussed herein.

35. IT IS FURTHER ORDERED that Progeny LMS, LLC, file with the Commission a report in WT Docket No. 11-49 providing details on the M-LMS system design and the other matters specified in this Order. Progeny will file this report once it has completed design of its M-LMS system but prior to commencing commercial operations. The report shall provide details on Progeny's M-LMS system design, describe the process by which Progeny carried out the field testing, including the particular Part 15 devices tested, and demonstrate that Progeny's M-LMS system will not cause unacceptable levels of interference to Part 15 devices that operate in the 902-928 MHz band.

FEDERAL COMMUNICATIONS COMMISSION

Rick Kaplan  
Chief, Wireless Telecommunications Bureau

Julius Knapp  
Chief, Office of Engineering and Technology

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<sup>105</sup> See Havens "Request to Reissue Public Notice and Place in Existing Relevant Docket and Request to Extend Deadlines for Comments and Reply Comments," WT Docket No. 11-49 (filed March 25, 2011); Havens Comments at 3.